# ATTITUDE TOWARDS E-LEARNING AMONG PUNJAB AND HARYANA UNIVERSITY STUDENTS IN RELATION TO THEIR COMPUTER SELF-EFFICACY AND ANXIETY

## SYNOPSIS

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## INTRODUCTION

In today's information society, knowledge and know–how are some of the most valuable assets, setting the education sector under pressure to deliver according to demand. Major challenges in education include access issues, i.e. being able to provide education to everyone who requests, costs (of providing education) and declining public revenues with most of education still being responsibility of the public sector (Daniel, 1997). Further, the process of globalization, characterized by increased trans-national economic interdependence and competition, leads to the emergence of an international higher education sector in which a growing number of traditional and new types of higher education providers compete with each other. Within all these contexts of change and development, information and communication technology is both driving and enabling the processes towards a knowledge-driven global economy. It allows higher education providers to accommodate the specific needs of students in terms of mode, pace, place and time of study and to cater to different and new target groups and specialized markets both locally and internationally (CHEPS, 2000).

Information and communication Technology (ICT) encompasses the effective use of equipment and programs to access, retrieve, store, organize, manipulate and present data and information (Gay & Blades, 2005). E-learning, which is described as the use of ICT to enhance or support learning and teaching in education, has become increasingly important in tertiary education (OECD, 2005). The concept of e-learning is described in a lot of literature sources. The basics of these definitions of e-learning are combination, implementation and relationship of the activities for learning and teaching via different electronic media such as in distance and open learning, etc. Therefore, the recognition of the pedagogical and technological dimensions of e-learning is important as it concerns the development and application of technology enhanced courses (Tuparova et al., 2006). Furthermore, "information technology literacy" has become the centrepiece of "professional literacy" and "workforce readiness" (Resnick & Wirt, 1996). Workforce readiness includes communication skills, competencies in emerging technologies and critical thinking skills. Given the certainty of technological change, far more desirable than competencies in a limited number of specific

applications, are broad flexible skills, transferable skills and the related confidence to adapt to new applications and environments (Rush, 1998). Romiszowski and Mason (1996) conclude that higher education will expand academic computing resources not only for their pedagogical benefits but also "because it will be seen to be the duty of education to use such systems in order to prepare its graduates for the realities of a workplace where they will be obliged to use them".

However, in integrating computers in higher education, researchers have proposed that positive attitudes toward computers and high computer self – efficacy and lower computer anxiety levels could be important factors in helping people learn computer skills and use computer (Busch, 1995). Sproull, Zubrow and Kiesler (1986) recognized that some college students felt confused and a loss of personal control when they encountered technology. Deloughry (1993) also cited that "as many as one–third of the 14 million college students in the United states suffer from "technophobia" and implied that the effectiveness for the use of computers in higher education might not be realized without research foundations and corresponding planning (Sam, Othman & Nordin, 2005).

## E-Learning

E-learning can be defined as the use of digital technologies and media to deliver, support and enhance teaching, learning, assessment and evaluation" . (Armitage and O'Leary, 2003). According to Naidu (2003), "e-learning refers to the systematic use of networked information and communication technology in teaching and learning."

The American Society for Training and Development (ASTD) defines e- learning as teaching and learning "delivered, enabled or mediated by electronic technology for the explicit purpose of learning" (Rossen and Hartley, 2001). They include online learning, Web-based learning, and computer-based learning within e learning.

Massy and Zemsky (2004) suggest three ways to view e-learning :

1. e-learning as distance education

2. e-learning as course management systems; and

3. e-learning as electronically mediated learning, providing interactive, but not necessarily remote, learning in a digital format.

Khan (2005) suggests that the e-learning system is used for a diverse, open and flexible learning environment. In addition, e-learning system can be analysed as an approach to deliver inventive, cantered on the learner, interactive and easy learning environment to anyone, anywhere, anytime using the features and resources of the different digital technologies as well as other types of educational material adapted to a distributed, open and flexible learning environment (Ibid, 2008).

E-learning is a vast combination of processes, content and infrastructure to use computers and networks to scale and/or to improve one or more of the most important parts of a learning value chain, including the management and delivery (Aldrich 2005). E-learning refers to the use of computer-based electronic technologies of Internet, E-mail, Websites and CD-ROMs, and their applications, to deliver, facilitate and enhance both formal and informal learning and knowledge sharing at any time, any place and any pace (World Bank, 2009).

Krishna kumar R & Rajesh K M. (2011) defined E-learning is the future of learning that focuses on both the individual needs of learners as well as the delivered content. Faculty members should make the best use of the latest available technology and to stay informed about the latest developments and transfer what they have learned to new generations of students. Teacher's first-hand experience has a positive effect on his or her use of e-learning environments. Therefore, teachers should be encouraged to try e-learning strategies in their own courses.

**Types of E-learning**

E-learning is basically two types; **synchronous** learning and **asynchronous** learning.

**Synchronous**

Synchronous means "At the same time" involve interaction of participant with an instructor via web in real time. Synchronous technologies are telephone, video conferencing and web conferencing etc. it has two types of methods-

**a)** Virtual classroom- virtual classroom duplicate the features of a real classroom online. Participants interact with each other and instructor online. Instant messaging, chat audio and video conferencing etc.

**b)** Blended method- most of the educational institutions prefer to use a mix of both synchronous and asynchronous e-learning methods according to their requirement.

**Asynchronous**

Asynchronous means "not at the same time" allow the participants to complete the WBT at his own pace, without live interaction with the instructor. Asynchronous technologies are audio cassettes, e-mail, message board forms, printed materials, voice mail, fax, video cassettes, CD-ROMs; a new form of learning is emerging called "blended learning".

**Components to be included in E-learning**

E-learning can incorporate many elements that make learning new material. A new process or a new program, more fun, Making learning more interesting and fun is what making this e-learning more effective. If you aren't pulled into the material, you really aren't learning as well as you could be. This is what makes e-learning so great for so many types of learning. Obviously, every type of training can't be turned into e-Training, but many can with excellent results. The components that are to be included to make e-learning successful are:

a) Varying the types of content- Images, sounds and text work together to build memory in several areas of the brain and result in better retention of the concept being learnt.

b) Creating interaction that engages the attention- Games, quizzes and even just required manipulation of something on the screen creates more interest, which in turn builds better retention.

c) Providing immediate feedback- E-learning courses can build in immediate feedback to correct misunderstood material. The most immediate feedback is better as each step of learning building upon the previous step. If no feedback is given, then the next step may be building upon an incorrect Interpretation.

d) Encouraging interaction with other e-Learners and an e-Instructor- Chat rooms, discussion boards, instant messaging and e-mail all offer effective interaction for e-learners, and do a good job of taking the place of classroom discussion. Building an online community significantly influences the success of online programs (F. Deepa, 2012).

## SELF-EFFICACY

Self-efficacy, a psychological construct first proposed by Bandura in 1977, can be described as "a belief about one's own capability to organize and complete a course of action required to accomplish a specific task" (Eggen and Kauchak, 2007). As can be understood from the definition, self-efficacy "is concerned ... with judgments of what one can do with whatever skills he/she possess" (Bandura, 1986). It consists of two components, efficacy expectations, which are related to belief in personal capacity to affect behaviour, and outcome expectations, which is a belief that the behaviour will result in a particular outcome (Albion, 1999).

Several research studies indicate that depending on these sources of judgments, individuals have negative or positive ideas about a behaviour before they undertake it and these ideas affect their course of action (Bandura, 1986; Albion, 2001).

## COMPUTER SELF-EFFICACY

Compeau and Higgins (1995) defined computer self-efficacy as "a judgment of one's capability to use computer". It was noted that self-efficacy judgments could influence an individual's expectations because "the outcomes one expects derives largely from judgments as to how well one can execute the requisite behaviours" (Bandura, 1978).

According to Bandura (1986), self-efficacy can be a better predictor of performance than actual capability because self-percept is instrumental in determining what individuals do with the knowledge and skills they possess.

Computer Self-Efficacy refers to "self- judgment regarding the ability of a person to use computer is one kind of confidence regarding self-computer abilities, which are used to complete some specific task" (Murphy, Coover & Owen, 1989).

Computer Self-Efficacy has a major impact on an individual's expectations towards using computers according to Compeau and Higgins (1995). In general, it is believed that individuals who did not see themselves as competent computer users were less likely to use computers (Kinzie and Delcourt, 1991; Oliver and Shapio, 1993). Sproull, Zubrow and Kiseler (1986) recognized that some college students felt confused and loss of personal control when they encountered technology. DeLoughry (1993) also citied that "as many as one-third of the 14 million college students in the United States suffer from "Technophobia" and implied that the effectiveness for the use of computer in higher education might not be realized without research foundations and corresponding planning.

Miura (1987) has suggested that self- efficacy may be an important factor related to the acquisition of computing skills. Computer Self-Efficacy is a specific type of self-efficacy. Specific self-efficacy is defined as belief in one's ability to "Mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands" (Wood & Bandura, 1989). Thus, computer self-efficacy is belief of one's capability to use the computer (Compeau & Higgins, 1995) and participants with little confidence in their ability to use computers might perform more poorly on computer-based tasks. On the other hand, previous computer experience may lead students to believe that computer applications courses are easy. Heightened self-efficacy may cause students to expend little effort towards learning new computer concepts. On the other hand, Brosnan and Lee (1998) argued that better computer self-efficacy could increase persistence in studying computing.

Studies by Kristen and Roth (1998a; 1998b) and Landford and Reeves (1998) showed that higher levels of computer self-efficacy corresponded to increased performance in computer courses and a greater achievement of computer competency.

Computer Self – Efficacy has been found to be positively related to performance in software training, perceived ease of use of computer systems and adaptability to new computer technology (Gist, Burkhardt and Bras, 1990). Compeau and Higgins (1995) reported that encouragement by others use of computer and organizational support have a significant influence on employees' computer self – efficacy.

The concept of computer self-efficacy has become an important social construct in assessing people's attitudes towards computer and technology (Cassidy & Eachus, 2002; Compeau & Higgins, 1995). There is a significant body of research which suggests that higher levels of self-efficacy correlates to greater motivational efforts and perseverance (Cassidy & Eachus, 2002).

Higher self-efficacy leads to lower computer related anxiety and computer phobia (Compeau and Higgins, 1995; Betz and Hacket, 1981). Person with greater self-efficacy have a positive attitude towards ICT in general (Venkatesh and Davis,(1996). And are more likely to feel comfortable about using it (Igbaria and Ilvari, 1995).

## ANXIETY

Anxiety is the distress or uneasiness of mind caused by apprehension of danger or misfortune. May (1977) defined anxiety as "an apprehension cued off by a threat to some value that the individual holds essential to his existence as a personality. In more general terms, Spielberger (1966) regarded anxiety as "a principal causation agent for such diverse behaviour consequences as insomnia, immoral and sinful acts, instances of creative self-expression, debilitating psychological and psychometric symptoms, and idiosyncratic mannerisms of endless variety".

## COMPUTER ANXIETY

Computer anxiety is characterized as an effective response, an emotional fear of potential negative outcomes such as damaging the equipment or looking foolish. From a n information processing perspective, the negative feelings associated with high anxiety detract cognitive resources from task performance (Glass, & Knight, 1987)

Computer anxiety, defined by Raub (1981), is "the complex emotional reactions that are evoked in individuals who interpret computers as personally threatening". One study

(Mcdonald, 1983) estimated that approximately 30 to 35% of all computer users experience some level of anxiety when they first encounter computer technology. Computer anxiety manifests itself in many forms and results in a number of common fears. Users are afraid that they will break the computer or destroy vital information. They feel awkward and fear looking stupid. Computers seem to have almost human characteristics and their speed can make people feel like the machine is smarter than they are. They feel overwhelmed by the technology and their lack of understanding is expressed as "if I'm so far behind already, how will I ever catch up? (Raub, 1981).

McInerney, McInerney & Sinclair (1994) found that computer anxiety may include worries about embarrassment, looking foolish or even damaging computer equipment.

Igbaria & Iivari (1995) reported that computer anxiety has received considerable attention in the psychologically-based literature and is defined as generalized emotional distress or the tendency of an individual to be uneasy, apprehensive and/or phobic towards current or future use of computers.

Evidently, factors such as the context in which an individual was first introduced to the computer (Brosnan, 1998a, 1998b; Rosen & Weil, 1995), past failure and successes with hardware or software, and the current tasks being attempted, including the use of a new computer applications (Saade & Otrakji, 2007), are all determinants of the state and type of anxiety the individual is experiencing. These researchers have attempted to predict those who will experience computer anxiety by identifying factors that correlate with its occurrence. Frequently, such factors as self-efficacy and attitudes towards computer usage are posited as influencing the computer anxiety (Ayersman & Reed, 1995; Igbaria & Chakarabarti, 1990 Reed, Airsman, & Liu, 1996).

Literature on computer anxiety offers conflicting theories. Researchers (Loyd & Gressard, 1984; Howard & Smith, 1986; Glass &Knight, 1988; Necessary & Parish, 1996) support the theory that increasing computer experience will decrease computer anxiety. Necessary and Parish (1996) found that college students with little or no computer experience have more anxiety than those students that have computer experience. The results of their study revealed that "increased levels of computer experience and balance of weekly computer usage were both related with reduced levels of computer related anxiety". Glass and Knight (1988) determined that computer anxious students will become less anxious after an initial trauma period. It is reasonable to assume that by increasing computer usage there by

experience one would reduce anxiety. Yet for those who are computer anxious this may prove to be difficult. Because there are varying degrees of anxiety, those who are highly anxious may completely avoid computers.

Attitude also needs to be examined as an important factor. The user's attitude may directly influence their intention to use computers (Speier, Morris & Briggs 1997). A positive relationship exists between experience levels with computers and favourable attitude toward computers (Necessary & Parish, 1996). If the computer anxious user has a positive attitude toward computers, he or she can expect to reduce anxiety through continued computer experience. Computer attitude would seem then to be a significant determining factor that needs consideration. Changing the attitude (negative) of the computer anxious individual will be extremely important (Orr, 1998). The studies of computer anxiety on students related to learning outcomes and finding factors which affect computer anxiety are discussed in the next section

## Reviews of Related Literature

Research studies related to attitude toward e-learning:

Valenta (2001) examined the cluster of opinions held by students with respect to distance education and its application to education, across two populations: traditional college undergraduate students and adult learners (non-traditional graduate students). None of the students had any experience with online coursework. Q– Methodology was used to identify opinions, shared among students, on issues they considered important about the application of distance education to course instruction. Three opinions types were identified in this study: students who identified with issues of time and structure in learning, social interaction in learning, and convenience in learning. Participants recognize some benefits in the application of distance learning to deliver educational content, in terms of flexible time management and save travel time. However, they were quite concerned over the loss of face – to – face classroom interactions.

Zaraii Zavaraki (2003) performed a study on the "use of network communications in academic transactions by university teachers and its impact on learning outcomes of postgraduate students" in India. This study employed two samples of 260 university teachers and 500 postgraduate students of faculty of science, social science and commerce, Panjab

University, Chandigarh. He compared user and non-user faculty (level of use of computers) and their students in their attitude towards network communication. The findings revealed that user- faculty teachers had attitude more positive about internet in higher education as compared to non-user faculty teachers. In addition, postgraduate students of belonging to user faculty teachers had attitude more positive towards Internet technology and more general information about computers ( Microsoft Word, Microsoft Excel, PowerPoint) than as compared to students who belonged to non-user faculty teachers.

Sam, Othman and Nordin (2005) surveyed computer self-efficacy, computer anxiety and attitudes toward internet. The findings suggest that the undergraduates had moderate computer anxiousness, medium attitudes toward the Internet, and high computer self-efficacy and used the Internet extensively for educational purposes such as doing research, downloading electronic resources and e-mail communications. Undergraduates with better attitudes toward the internet did more "downloading of software and games" activities and they had higher computer self-efficacy. It also found a significant relationship between computer anxiety and attitudes towards the internet. Undergraduates who were highly computer anxious generally have more negative attitudes towards the use of internet.

Khunyakari, Mehrotra, Natarajan and Chunawala (2006) carried out a research on "Studying Indian Middle School Students' Attitudes towards Technology". Their results revealed that Indian students have a positive attitude towards technology. Students see technology as an important component for fulfilling their future career plans. They express their interest in design and make activities and see technology as having a positive influence on lives

Smart and Cappel (2006) conducted a comparison study on students' perceptions of integrating online components in two undergraduate business courses which referred to as the "required course" and the "elective course". Students were enrolled in one of these courses at a medium –sized Midwestern university in the United States. Chi- square tests revealed that subjects in the elective course had greater awareness at the Michigan Virtual University (MVU) prior to this study, they were more likely to have previously completed an MVU learning unit, and they consisted of significantly fewer business majors than subjects in the required course . The results identified that participants in an elective course rated the online modules significantly better than those in a required course. Overall, participants in the elective course rated the online modules marginally positive while those in the required course rated them marginally negative. Specifically, they rated the online learning units

significantly higher in terms of being “an effective way to learn” and “fun”, and they were significantly more in favour of using the online units again in this course in the future. In open-ended responses, participants also reported flexibility and convenience of online learning, ease of use, the organization of the units and immediate feedback, and the opportunity to gain online learning experience as the benefits of online units. In addition, there was no significant difference between student’s perception of online learning and gender.

Svirko and Mellanby (2008) assessed attitudes to e-learning, learning style and achievement in learning neuroanatomy by medical students. The results showed that most students reported that computer – aided learning (CAL) course was easy to follow (61%), however, 20.7% disagreed or strongly disagreed that it was .Only 26.0% of students agreed or strongly agreed that they enjoyed the CAL course, 40.2% disagreed or strongly disagreed. Participants were also asked whether the CAL course should contain less information, more information or the same amount; 74% of participants were happy with the current amount of information in the CAL course. Only 10.3% thought that it should contain more information and 15.2% thought that it should contain less information.

Buzzetto and More (2008) examined student perceptions of various E-learning Components at a historically Black university which is a member of the university system of the state of Maryland. They administrated a detailed 60 question survey distributed in-person in hard copy form to 160 students. In total, 141 students responded to the questionnaire .The majority of participants were minorities, with 75.9% African American, 6.4% African, 2.8% Asian, 4.3% Caucasian, 7.5% Hispanic or Caribbean. The results of the analysis indicated that students found course Websites to be helpful resources that enhanced the understanding of course content, and that websites would continue to have an impact on higher education in the future. The examination of individual e-learning components indicated that students responded favourably to most available features. The most popular feature noted was the assignment section with 79.8% agreeing / strongly agreeing that they enjoyed submitting assignments online, 66.6%agreeing / strongly agreeing that they prefer the online submission of assignments, and an overwhelming 99.1% responding that they liked that they had the ability to check assignment grades online. Moreover, most students were satisfied with the online lecture notes ( 89.5% agree / strongly agree ), considered them a valuable resource (79 .6% agree / strongly agree) and found them easy to print (75 .2% agree / strongly agree).

Online exams were also viewed as convenient (72.8%) and students appreciated that they received an instant grade and feedback after taking exams (89.7%). Finally, although students were largely satisfied with their online learning experience the students were mixed as to whether they plan on taking an online course in the future with 52.9% saying yes and 47.1% responding no.

Shraim and Khlaif (2010) conducted a study in Palestine with the intention to explore students' readiness towards e-learning by implementing an interactive Web based application prototype called Alaws Educational Network (AEN). The network provides a variety of methods for student-centred learning such as virtual classrooms (VCR), discussion forum and e-learning courses. Questionnaires were distributed to higher secondary school students (average age of 18 years) who actively participated in VCR sessions in order to evaluate the aspects of VCR in terms of usefulness, self-efficacy, willingness and challenges. The survey was undertaken by 100 students and it was concluded that even though the students have positive attitudes towards e-learning, they may not yet be ready to adapt them since the students used the VCR as a supplement to current learning method, not as a replacement to traditional face to face learning method.

Rhema et al (2014) conducted study on perception and experiences of students from two Lybian universities on technology enabled learning. The impact of demographic features, technology access, technology utilization in learning, technological skills and technology satisfaction on students attitude were studied. The results stated that demographic features such as gender differences locality of student, current enrolment year and age have no effect on students' attitude towards E-learning. Students having access to technology were more favourable towards E-learning. A substantial factor of attitudes toward e-learning is student skills in technologies

Dhamija,N (2016) evaluate undergraduate students' attitude towards the academic utilization of E-learning. An attitude scale was developed and the study was carried out on 300 students belonging to arts, commerce and science streams. Differences in attitude between different stream students were observed. The findings revealed that overall it was affirmative approach towards E-learning among most of the students. There were no differences in attitude between arts and commerce students as well as arts and science students. Also no differences were reported between commerce and science students.

Though, significant difference was reported among students with respect to gender and rural and urban residence.

Thakkar & Joshi (2017) Found students' attitude towards the use of E-learning systems with respect to gender, locality and social category. Finding revels that there is a highly positive incline of diploma engineering students towards the usage of E-learning and attitude is not affected by differences in gender, locality or social category of students.

Dookhan (2018) Conducted study on the Mauritian university students as the consumer in the e-learning process. A survey was conducted using structured questionnaire to target university students from public HEIs in Mauritius. Out of a sample of 200 respondents only 156 questionnaires were received back where only 150 were found reliable for testing. Data collected was statistically examined using SPSS and the research hypotheses were tested using regression analysis. The results reveal that students are adopting technologies in their studies and wish to use it in a more progressive way.

Khan, M(2020) examine the students' perception and readiness about on-line e-learning system adopted at the university level during the on-going COVID-19 pandemic. For the study, the quantitative approach has been adopted and responses from 184 university students of National Capital Territory (NCT) of Delhi, India namely Delhi University, Jamia Millia Islamia (Central University) and Guru Gobind Singh Indraprastha University are collected through online questionnaire. This research study was conducted during June–August 2020. The findings of the study reveal students' positive perception towards e-learning and thus acceptance of this new learning system. It has also empirically demonstrated the significance of e-learning in the time of COVID-19 crisis. In fact, e-learning has emerged as a new way of enhancing the learning process where social media may further improve the learning output. The findings of the study will facilitate educational institutions and policy makers to take this online-learning process to the next level in a better way

Malkawi (2021) Investigated the satisfaction level and attitudes of undergraduate students at United Arab Emirates University towards eLearning and virtual classes in exceptional circumstances of COVID-19 Crisis, in view of five demographic independent variables: students' gender, educational level, residential location, college, and GPA. The researchers adopted and implemented a questionnaire where its validity and reliability for collecting data have been verified. Mean, standard deviations, and one-way ANOVA tests were conducted.

The results indicate that the students' satisfaction level and attitudes towards eLearning and virtual classes are strong in general with varying degrees between items. The results did not show a significant difference at the level ($\alpha = 0.05$) for the independent variables: students' gender, residential location, college, and GPA. However, the results imply that there is a statistically significant difference in students' satisfaction level and attitudes towards eLearning and virtual classes for the independent variable of educational level. The study concluded with few recommendations; supporting the current efforts of the university to provide all the requirements of education via eLearning and virtual classes such as suitable infrastructure and technical support. Besides, there is a need for a continuous update of the teaching and learning platforms in line with continuous development and training for instructors and students.

# Reviews related to computer self-efficacy

Agarwal, Sambamurthy and Stair (2000) found that judgments of self-efficacy serve as key antecedents of the perceived cognitive effort (ease of use) associated with technology usage. Further, self-efficacy judgments in the task domain of computing are strongly influenced by the extent to which individuals believe that they are personally innovative with respect to information technology.

James (2002) examined three CSE instruments, one general, one global, and one specific in their ability to predict specific and general outcomes (competence and attitudes). The results showed that there was a strong correlation between computer self-efficacy and the attitudes of anxiety and computer liking. Computer self- efficacy was positively related to liking and negatively related to anxiety. In addition, the results suggested that some computer self-efficacy measures were more appropriate than others, depending on the outcome that was to be predicted and the ability level of the participants. The global instrument (Compeau and Higgins, 1995) was more strong than other instruments in predicting domain specific competencies, attitudes and overall ability.

Barbeite and Weiss (2004) discovered that computer self-efficacy measures generally better predicted comfort with computers and the internet than computer anxiety. Similarly, computer self-efficacy for advanced activities was the better consistent predictor of use and comfort than beginner activities.

Hayashi, Chen, Ryan and Wu (2004) blended the Computer Self-Efficacy (CSE) and Expectation-Confirmation Models (ECM), and assessed their applicability on the intention of online learners who continue using the e-learning system as a vehicle to assimilate IT skills. Neither computer self-efficacy nor social presence did not have an effect on the intention of end-users to continue using e-learning systems to assimilate IT skills. As a moderating factor, computer self-efficacy did not have significant influence on learning outcomes.

Noiwan, Piyawat and Norcio (2005) evaluated computer attitude and computer self-efficacy of 151 Thai undergraduate students. The computer attitude questionnaire by (Loyd & Loyd, 1985) and the computer self-efficacy questionnaire by ( Kinzie, Delcourt, & Powers, 1994) were utilized to gather the data. The computer attitude survey measures four subscales, namely, computer anxiety, computer confidence, computer liking, and computer usefulness. Another survey measures self-efficacy in using word processing, email, spread-sheet, database management, statistical, and presentation software. Generally, the survey results address that students possessed moderately positive attitudes on computer technology and neutral confidence in using computer applications. Moreover, the levels of computer self-efficacies are diverse. Students have more confidence in using e-mail and word processing software than other applications. Generally, students with higher self-efficacies on e-mail, word processing, and spread sheet moderately have positive computer attitudes. The study suggested the need for improvements in computer related curricula used in high schools and in the first year at universities.

Lee and Hwang (2007) in their study on "The effects of computer self-efficacy and learning management system quality on e-learner's satisfaction" discovered that both LMS quality and self-regulated learning strategy were based on computer self-efficacy in e-Learning system.

Hasan (2008) investigated the impact of multilevel computer self-efficacy on effectiveness of computer training .The results of this study revealed that general CSE had positive effects on far-transfer learning and perceived ease of use, whereas application-specific CSE demonstrated positive effects on near-transfer learning and perceived ease of use. The results also showed that general and application-specific CSE had negative effects on computer anxiety. This study provides better insights into the relationships between the two levels of CSE and computer training outcomes and offers valuable research and practical implications.

Liaw (2008) conducted a total of 424 university students using a standard questionnaire. The results showed that perceived self-efficacy is a critical factor that influences learners'

satisfaction with the Blackboard e-learning system. Perceived usefulness and perceived satisfaction both contribute to the learners' behavioural intention to use the e-learning system. Furthermore, e-learning effectiveness can be influenced by multimedia instruction, interactive learning activities, and e-learning system quality. This research proposes a conceptual model for understanding learners' satisfaction, behavioural intention, and effectiveness of using the e-learning system.

Saade and Kira (2009) in their study 'Computer Anxiety in E-Learning: The Effect of Computer Self-Efficacy' stressed that two variables computer anxiety and computer self-efficacy lay an impact on individual's use of computers and performance for computer-based tasks. Anxiety has been argued to impact computer based learning by affecting levels of self-efficacy anchored in social learning and outcome expectation theories. Self-efficacy is determined by levels of anxiety such that reduced anxiety and increased experience improves performance indirectly by increasing levels of self-efficacy. In this study, we investigate the influence of computer anxiety on perceived ease of use and the mediating effect of computer self-efficacy on this relationship, within an e-learning context. A survey methodology approach was used in this study using 18 items for 3 constructs (perceived ease of use, anxiety, and self-efficacy). Survey data from 645 university students were analysed. The psychometric properties of the items and constructs were validated followed by the assessment of mediation of computer self-efficacy. Results from the use of a learning management system indicate that computer self-efficacy plays a significant role in mediating the impact of anxiety on perceived ease of use. This role is observed by computer self-efficacy (1) reducing the strength and significance of the impact of anxiety on perceived ease of use and (2) having a strong and significant relationship with computer anxiety. The findings demonstrate the importance of self-efficacy as a mediator between computer anxiety and perceived ease of use of a learning management system (LMS). With the continuous development of richer and more integrated interfaces, anxieties about learning to use the new interface and executing tasks effectively becomes of primary importance.

Alenezi, Abdul Karim and Veloo (2010) investigated the role of enjoyment, computer anxiety, computer self-efficacy and Internet experience in influencing the students' intention to use E-learning in Saudi's universities. 402 governmental universities' students participated in the study to test the proposed hypotheses and to determine whether the proposed variables have an effect on the students' intention to use E-learning system. The results of stepwise

regression indicated that computer anxiety, computer self-efficacy and enjoyment significantly influence the students' intention to use E-learning**.**

Egbe (2014) examined the attitude of students towards e-learning in selected south-west Nigerian universities. The study looked at the relationship between attitude and e-learning with the application of Technology Acceptance Model (TAM). Questionnaire was used to collect data from a sample of 387 postgraduate and undergraduate students. Statistical techniques used for the analyses of data were frequency distribution, simple linear regression, One-Way ANOVA and paired T-test was used to test the hypotheses. Findings showed that students have a positive attitude towards e-learning because they find the system easy to use and useful for their course work. Also, attitude influences the intention to use an e-learning system.

Konwar (2017) conducted Study on Attitude of College Students towards E-learning with Special Reference to North Lakhimpur of Lakhimpur District, Assam. Sample of 200 college students were randomly selected. Findings of the study revealed that the college students have positive attitudes towards e-learning. There exists no significant difference in attitude towards e- learning between male and female, urban and rural college students.

Felecia (2018) examined the relationships between self-reported self-efficacy, ethnicity, and age, as related to attitudes toward online learning. The participants consisted of 295 post-secondary students enrolled in online courses. Multiple regression analysis was used to analyse the data and determine which variables had the greatest amount of impact on the students' attitudes toward online learning. The analysis of the data found a significant relationship between reading self-efficacy and a student's attitude toward online learning. No statistically significant evidence was found for the relationships between age nor ethnicity.

Gordon &Gabriel (2020) Conducted study on Individual innovativeness, self-efficacy and e-learning readiness of students of Yenagoa study centre, National Open University of Nigeria a quantitative approach was adopted to address the research questions and to establish whether a statistically significant relationship existed between individual innovativeness, e-learning self-efficacy. Total, 476 first- and second-years students of the university participated in the four-Likert-type scale survey. It found that a strong positive and significant relationship was observed between individual innovativeness and e-learning readiness of first- and second-year students of the Yenagoa Study Centre of the National Open University

of Nigeria (NOUN); a statistically significant relationship was also found between e-learning self-efficacy scores and the e-learning readiness of the first- and second-year students of the Yenagoa Study Centre of NOUN; there was a statistically significant joint relationship between the three variables under investigation; findings equally revealed that male respondents had higher e-learning readiness than their female counterparts.

# Reviews Related to Computer Anxiety

Panagiotakopoulos and Koustourakis (2001) conducted a study within a sample of first – year students at the department of primary Education to establish the existence of any such anxiety or phobia in education . The test was carried out both before and after a six month course on computers so as to enable any deviations in anxiety to be traced. The results showed that the sample initially exhibited symptoms of computer anxiety, which was, however, drastically reduced at the end of the course. There was no connection between the degree of "computer anxiety" and sex or the age of the subjects.

Barbeite and Weiss (2004) concluded that computer anxiety had poorer effect on computer and internet use than computer self-efficacy. But it had significant correlation with computer self-efficacy. But a regression analysis demonstrated that both computer anxiety scales predicted each computer self-efficacy measures. For computer self-efficacy for general/beginner activities, anxiety of computer use (B = -0.46, P< 0.001) and anxiety of computer-related activities (B = -0.014, P= 0.018) both accounted for a significant portion of variance (R square = 0.26, P< 0.001). For computer self-efficacy for advanced activities, anxiety of computer use (B = -0.031, P< 0.001), but not anxiety of computer –related activities (B = -0.034, P= 0.60 ) accounted for a significant portion of variance (R square = o.10, P< 0.001).

Aziz (2004) carried out a study to investigate the relationship between I.C.S. student's knowledge, anxiety and attitude towards computers. Sample of the study consisted of all the students of computer science studying at intermediate level in Punjab. The subject of computer studies was being taught as an optional subject at intermediate level in Pakistan labelled as Inter in computer science, abbreviated as I.C.S. Attitude and anxiety were measured through C.A.S. The key conclusions based on descriptive and inferential statistical

analysis indicated that majority of the students had no previous knowledge of computers and no home computer while majority of colleges had computer graduate teachers and insufficient physical facilities. It was revealed that there was a positive correlation between knowledge and attitude and negative correlation between anxiety and attitude.

Sam, Othman and Nordin (2005) in their study on computer self-efficacy, computer anxiety and attitudes towards the internet, found a significant relationship between computer anxiety and attitudes toward the internet. Undergraduates who were highly computer anxious generally have more negative attitudes toward the use of internet.

Noiwan, Piyawat and Norcio (2005) in their research on "Computer Attitude and Computer Self-Efficacy: A Case Study of Thai Undergraduate Students" found that students with less computer anxiety tend to have more computer confidence and computer liking. Students who are more confident in using computers tend to like working with computers. Students who think that computers are moderately useful tend to have less anxiety, more confidence and more computer liking. Moreover, novice users have lower levels of computer attitude and computer self-efficacy than do moderate-skill users.

Torkzadeh, Chang and Demirhan (2006) performed a study on "A contingency model of computer and internet self-efficacy". Measures of user attitude, computer anxiety, computer self-efficacy, and Internet self-efficacy were used in a university environment to collect 347 responses at both the beginning and end of an introductory computer course. Results suggested that training significantly improved computer and internet self-efficacy. Respondents with 'favourable' attitudes towards computers improved their self-efficacy significantly more than respondents with 'unfavourable' attitudes. Respondents with 'low' computer anxiety improved their self-efficacy significantly more than respondents with 'high' computer anxiety. The interaction effect between attitude and anxiety was significant for computer self-efficacy scores but not for internet self-efficacy scores.

Saade and Kira (2009) carried out a study on "computer anxiety in e-learning: The effect of computer self-efficacy". Survey data from 645 university students who came from various cultural backgrounds (Asian, Middle Eastern, North American) were analysed. The results showed that computer self-efficacy played a significant role in mediating the impact of anxiety on perceived ease of use. This role was observed by computer self-efficacy (1) reducing the strength and significant of the impact of anxiety on perceived ease of use and (2)

having a strong and significant relationship with computer anxiety. The existence of a strong and significant relationship between ANX and CSE showed that as student anxiety increases, the perception of ease of use of the learning management system decreases or vice versa.

Mak & Nebebe (2017) investigated the state of anxiety and associated expected performance in online courses at the undergraduate level. A survey methodology approach was used for the anxiety scale measurements and sample of 1377 participants was obtained. Finding revealed that 30% of students seem to experience some sort of anxiety with online courses. Female students are more anxious about taking online courses than male.

Schlebusch (2018) Conducted study on computer anxiety, computer self-efficacy and attitude towards the internet among first year students at a South African university of technology. Data collection was done through a five section survey. The research revealed that students suffer from moderate computer anxiety; they have a moderate compute self-efficacy; and their attitude towards the internet is positive.

Yanto(2019) conducted study on computer anxiety, computer knowledge, computer attitude, and self-efficacy in improving Accurate computer learning achievement. The sample of the study 156 twelfth graders of Islamic Banking and Accounting students program SMK N 1 Kudus was obtained. The methods used to collect data were documentation and questionnaire. The result showed that computer knowledge and self-efficacy have no effect on computer accurate learning achievement. Computer anxiety has negative effect on self-efficacy 34, 6%. While the computer attitude has positive effect on self-efficacy 30, 1%. However, computer knowledge has no effect on self-efficacy. Computer anxiety has negative effect on computer knowledge 32,6% and computer attitude 30,2%. Based on the results of the study it can be concluded that self-efficacy is influenced by computer anxiety and computer attitude. Computer anxiety has negative effect on computer knowledge and computer attitude.

## SIGNIFICANCE OF THE STUDY

It is widely accepted that advances in information technology and new developments in learning science provide opportunities to create well – designed, learner–centred, interactive, affordable, efficient, flexible e-learning environments (Khan, 2005). E-learning, as a positive reaction by universities to the challenge introduced by IT, is characterized by: (1) Separation in time or space between the teacher and students, among the students themselves, and between the students and educational resources; 2) interaction between the teacher and students, among the students, and between the students and educational resources by means of one or more media, especially through the internet; and (3) a process of teaching and learning not limited to the immediate time and or place (Oh, 2003).

Considering student's perception toward e-learning is important in successful development of e-learning in higher education, since attitude of user towards application of information technology is one of the most effective factors (Yaghoubi, Mohammadi, Iravani, Attaran and Gheidi, 2008). Attitudes towards computer knowledge associated with a concept known as computer self – efficacy (Delcourt and Kenzie, 1993), which, in turn, has proven to be a factor in understanding the frequency and success with which individuals use computers (Bandura, 1986, Compeau and Higgins 1995). Computer self- efficacy examines users' beliefs regarding their ability to perform specific tasks using a software package (Dishaw et al., 2002). Computer self–efficacy has been found to have a strong negative correlation with computer anxiety. (Compeau & Higgins, 1995; Martocchio, 1994; Harrison & Rainer, 1992b; Igbaria et al, 1994; Henderson et al., 1995). Anxiety has also been found to have a high negative correlation with feelings of self-efficacy (Laguardia & Labbe, 1993; Henderson et al., 1995; Igbaria et al., 1994). Feelings of anxiety toward computers and computer use, is common, affecting 30 to 40% of the population (Tseng, Tiplady, Maclead and Wright, 1997). Researchers Rosen, Sears and Weit (1987) agree, reporting that one third of all college students experience some type of technophobia (Deloughry, 1993). Anxiety and fear lead to avoidance (Glass & Knight, 1988) which reduces the anxiety and fear and thus strengthens the avoidance. As the avoidance behavior becomes a function of it's anxiety reducing consequences (Kreitner & Luthans, 1984; Davis & Luthans, 1980), it is repeated and the activity is avoided. This process has been supported by findings that negative attitudes, fear and anxiety of computers limit use (Igbaria, Schiffman and Wieckowski, 1994). So, the

investigator proposed to study attitude towards e-learning among university students of Punjab and Haryana in relation to their computer self -efficacy and computer anxiety.

# STATEMENT OF THE PROBLEM

ATTITUDE TOWARDS E-LEARNING AMONG PUNJAB AND HARYANA UNIVERSITY STUDENTS IN RELATION TO THEIR COMPUTER SELF-EFFICACY AND ANXIETY

# OPERATIONAL DEFINITION

**E-Learning**

"E-learning comprises all forms of electronically supported learning and teaching. E-learning application and processes include Web-based learning, computer-based learning, virtual teaching opportunities and digital collaboration. Content is provided by the band internet, intranet/extranet, audio or video, satellite TV and CD-ROM. It can be self-paced or instructor-led and includes the media in the form of text, image, animation, video and audio streaming" (khan1977).

**Attitude**

"An attitude is a hypothetical construct that represents an individual's degree of like or dislike for something. In other words, Attitude is the inner feeling or belief of a person towards a particular phenomenon" (Festiger,1957).

**Self-Efficacy**

"Self-efficacy is the individual's expectation concerning their ability to perform various tasks. It is a positive feeling about oneself. It is the individual's beliefs about their ability to perform at given levels. The more a person has self-confidence and self-believe, the more self-efficacy he possesses (Bandura, 1986)"

**Computer Self-Efficacy**

Computer self-efficacy refers to "self- judgment regarding the ability of a person to use computer is one kind of confidence regarding self-computer abilities, which are used to complete some specific task" (Murphy, Coover & Owen, 1989).

**Computer Anxiety**

Computer anxiety has received considerable attention in the psychologically-based literature and is defined as generalized emotional distress or the tendency of an individual to be uneasy, apprehensive and/or phobic towards current or future use of computers (Igbaria & Iivari 1995).

# Objectives

1. To compare attitude towards e-learning Punjab and Haryana university students with respect to their:

- Computer self-efficacy
- Computer anxiety

2. To study student's attitude towards e-learning of Punjab and Haryana in relation to
- Gender
- Different faculties (Science, Arts)
- Interaction between state type and Gender
- Interaction between state type and different faculties (Science, Arts)
- Interaction between gender and different faculties (Science, Arts)
- Interaction between State type different faculties (Science, Arts) and gender

3. To study student's computer self-efficacy of Punjab and Haryana in relation to
- Gender
- Different faculties (Science, Arts)
- Interaction between State type and Gender
- Interaction between State type and different faculties (Science, Arts)
- Interaction between gender and different faculties (Science, Arts)
- Interaction between state type , different faculties (Science, Arts) and gender

4. To study student's computer anxiety of Punjab and Haryana in relation to
- Gender
- Different faculties (Science, Arts )
- Interaction between State type and Gender
- Interaction between State type and different faculties (Science, Arts )
- Interaction between gender and different faculties (Science, Arts)

• Interaction between state type and different faculties (Science, Arts), Gender

5. To study relationship among attitude towards e-learning and computer self-efficacy and computer anxiety among Punjab and Haryana university students

# Hypotheses

Following null hypotheses were tested through this analysis:

H1: There is no significant difference between mean scores of Punjab and Haryana university students on attitude towards e-learning with respect to their computer self-efficacy

H2: There is no significant difference between mean scores of Punjab and Haryana university students on attitude towards e-learning with respect to their computer anxiety

**Hypotheses related to Attitude towards e-learning scores**

Following null hypotheses were tested through this analysis:

H3: There is no significant difference between mean scores of Punjab and Haryana university students in attitude towards e-learning.

H4: There is no significant difference between mean attitude scores of male and female university students towards e- learning.

H5: There is no significant difference between mean attitude scores of university students belonging to different faculties viz , Arts / Education and science .

**Hypotheses related to computer self-efficacy scores**

Following null hypotheses were tested through this analysis:

H6: There is no significant difference between computer self-efficacy scores of students of Punjab and Haryana universities.

H7: There is no significant difference between computer self-efficacy scores of male and female university students.

H8: There is no significant difference between computer self-efficacy scores of students belonging to different faculties, Arts / Education and science.

**Hypotheses related to computer anxiety**

Following null hypotheses were tested through this analysis:

H9: There is no significant difference between computer anxiety scores of Punjab and Haryana university students.

H10: There is no significant difference between male and female university students' scores on computer anxiety.

H11: There is no significant difference between Punjab and Haryana student's computer anxiety scores belonging to different faculties, Arts / Education and science.

H12: There is no significant difference in scores of attitude towards e-learning scores of university students with respect to different levels of computer self-efficacy

H 13: There is no significant difference in scores of attitude towards e-learning scores of university students with respect to different levels of computer anxiety

**Hypotheses related to relationship among attitude towards e-learning and computer self-efficacy and computer anxiety**

Next, the relationship was studied between attitude towards e-learning and independent variables (computer self-efficacy and computer anxiety).

The following null hypotheses were tested with respect to the analysis of relationships between different variables.

H14. There exists no significant relationship between

- Attitude towards e-learning and computer self – efficacy
- Attitude towards e-learning and computer anxiety
- Computer self – efficacy and computer anxiety of both Punjab and Haryana students

# DELIMITATIONS

1. The study was delimited to 800 students of Punjab and Haryana universities.
2. The study was conducted on both male & female students of different faculties of the university.
3. The present study was delimited with respect to the variables of attitude towards E-learning, computer self-efficacy and computer anxiety.

## Method of the Study

Descriptive method of research will be employed for the study as this method is concerned with surveying, describing and investigating the existing phenomenon or issues, conditions and relationships that exist.

This method will be enable the researcher to compare Punjab and Haryana university students of different faculties, viz. Arts/Education and Science, with respect to attitude towards E-learning, computer self-efficacy and computer anxiety.

2x2x2 ANOVA will be used to study attitude towards e-learning in relation to state type, faculty type, gender and (i) computer self-efficacy (ii) computer anxiety.

## SAMPLE OF THE STUDY

Random sampling technique will be employed for the study. Approx. 800 students of different faculties and departments of Universities situated in Punjab and Haryana will be selected for the study.

## TOOLS

i. Attitude scale towards e-learning (developed by investigator)
ii. Computer self-efficacy scale (developed by investigator)
iii. Computer anxiety scale
(Computer anxiety scale by Embi (2007)

## Statistical Techniques to be used

1) 2*2*2 Anova will be used for data analysis.
2) Coefficient of correlation will be computed to study between different variables.
3)

## Processing of Data

The Raw Data was statically treated and proceeds an statically package for social sciences (SPSS) 16.

## CONDUCT OF THE STUDY

Phase I: To Construct attitude scale towards e-learning and computer self-efficacy scale.

Phase II: Data Collection

Phase III: Analysis of Data

## CHAPTER SCHEME

Chapter I : Introduction

Chapter II : Review of Related Literature

Chapter III : Standardization of attitude scale towards e-learning and computer self-efficacy scale.

Chapter IV : Plan and Procedure

Chapter V : Analysis, Interpretation and Discussion of Results

Chapter VI : Summary, Conclusions, Educational Implications

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Appendices

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